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IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): B. Mark Hirst

Application No.: 10/764,409

Filing Date: January 23, 2004

Confirmation No.: 9480

Examiner: Gary L. Laxton

Group Art Unit: 2838

Title: POWER CONVERTER WITH CHARGE PUMP CAPACITOR

Mail Stop Appeal Brief - Patents
Commissioner For Patents
PO Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL OF REPLY BRIEF

Transmitted herewith is the Reply Brief with respect to the Examiner's Answer mailed on October 17, 2007 .

This Reply Brief is being filed pursuant to 37 CFR 1.193(b) within two months of the date of the Examiner's Answer.

(Note: Extensions of time are not allowed under 37 CFR 1.136(a))

(Note: Failure to file a Reply Brief will result in dismissal of the Appeal as to the claims made subject to an expressly stated new ground rejection.)

No fee is required for filing of this Reply Brief.

If any fees are required please charge Deposit Account 08-2025.

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Typed Name: Alison L. Subendran

Signature:

Respectfully submitted,
B. Mark Hirst
By

Edward J. Brooks III

Attorney/Agent for Applicant(s)

Reg No. : 40,925

Date : 12/14/2007

Telephone : (612) 236-0120

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Docket No.: 200311455-1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Applicants:	:	B. Mark Hirst
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TC/A.U.	:	2838
Examiner:	:	Gary L. Laxton
Title	:	POWER CONVERTER WITH CHARGE PUMP CAPACITOR

APPELLANTS' REPLY BRIEF TO EXAMINER'S ANSWER DATED OCTOBER 17, 2007

MS APPEAL BRIEF-PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir or Madame:

This Reply Brief, in compliance with 37 C.F.R. § 41.41, is in response to the Examiner's Answer dated October 17, 2007 and in furtherance of the Notice of Appeal filed under 37 C.F.R. § 41.31 on April 23, 2007.

The Examiner's Grounds for Rejection are substantially the same as those presented in the Final Office Action dated January 24, 2007. Appellant has addressed these rejections in their Appeal Brief dated June 13, 2007. In the Examiner Answer dated October 17, 2007 the Examiner provides a response to the arguments presented in the Appeal Brief. Appellant respectfully traverses the assertions and conclusions provided in the Examiner's response. The following is the Appellant's Reply Brief.

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This brief contains items under the following headings as required by 37 C.F.R. § 41.37:

I. Real Party In Interest

II. Related Appeals and Interferences

III. Status of Claims

IV. Status of Amendments

V. Summary of Claimed Subject Matter

VI. Grounds of Rejection to be Reviewed on Appeal

VII. Argument

VIII. Claims Appendix

IX. Evidence Appendix

X. Related Proceedings Appendix

The final page of this brief bears the attorney's signature.

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I. REAL PARTY IN INTEREST

The real parties in interest for this appeal are:

A. The real party in interest is Hewlett-Packard Development Company, LP, a limited partnership established under the laws of the State of Texas and having a principal place of business at 20555 S.H. 249 Houston, TX 77070, U.S.A. (hereinafter "HPDC"). HPDC is a Texas limited partnership and is a wholly-owned affiliate of Hewlett-Packard Company, a Delaware Corporation, headquartered in Palo Alto, CA. The general or managing partner of HPDC is HPQ Holdings, LLC

II. RELATED APPEALS AND INTERFERANCES

Appellant submits that no related application is presently undergoing appeal or interference proceedings.

III. STATUS OF CLAIMS

A. Total Claims: 1-52

B. Current Status of Claims:

1. Claims canceled: 31, 39
2. Claims withdrawn: none
3. Claims pending: 1-30, 32-38, 40-52
4. Claims allowed: none
5. Claims rejected: 1-30, 32-38, 40-52
6. Claims objected to: none

C. Claims on Appeal: 1-30, 32-38, 40-52

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IV. STATUS OF AMENDMENTS

The Appellant has not filed any amendments to the application subsequent to the Final Office Action.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Independent Claim 1

Independent claim 1 recites an apparatus comprising a power converter. The power converter includes a charge pump capacitor. (Page 4, line 3; Fig. 1, 100) The charge pump capacitor is coupled to a two transistor totem-pole configuration to drive a primary of an isolation transformer. (Page 6, lines 7-8; Fig. 2, 120, 130) Also, a parasitic diode in one transistor opposes a parasitic diode in the other transistor. (Page 6, lines 21-22; Page 7, lines 1-2)

Dependent Claim 2

Claim 2 depends from independent claim 1 and recites that the charge pump capacitor is coupled to drive the primary of an isolation transformer without signal rectification at least in part by being adapted to switch between charging and discharging operation at different portions of a current cycle. (Page 6, lines 1-2 and 9-11; Page 11, lines 10-22; Fig. 2, 110, 160)

Dependent Claim 3

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Claim 3 depends from dependent claim 2 and recites that the charge pump capacitor is further adapted to switch between charging and discharging operation at or substantially near zero current. (Page 12, lines 18-20)

Dependent Claim 4

Claim 4 depends from independent claim 1 and recites that the power converter is incorporated on a motherboard. (Page 14, lines 7-9)

Dependent Claim 5

Claim 5 depends from independent claim 1 and recites that the power converter is coupled to a DC power consuming device. (Page 14, lines 17-20)

Dependent Claim 6

Claim 6 depends from dependent claim 5 and recites that the DC power consuming device comprises at least one of a fax, printer, scanner, and copier. (Page 14, lines 15-17)

Dependent Claim 7

Claim 7 depends from independent claim 1 and recites that the power converter comprises an AC-DC power converter. (Page 4, lines 4-6; Page 6, lines 2-3; Fig. 1)

Dependent Claim 8

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Claim 8 depends from dependent claim 7 and recites that the power converter includes an input pi filter. (Page 7, lines 12-17)

Dependent Claim 9

Claim 9 depends from dependent claim 7 and recites that a secondary of said isolation transformer is coupled in a circuit to perform full-wave rectification. (Page 10, lines 17-21)

Dependent Claim 10

Claim 10 depends from independent claim 1 and recites that the primary of said isolation transformer is coupled so as to resonate during operation. (Page 11, lines 5-7; Page 12, lines 6-8)

Independent Claim 11

Independent claim 11 recites circuit comprising a power converter. (Page 4, lines 3-4) The power converter comprises at least two transistor totem-pole configurations. (Page 6, lines 7-8) One of the transistor totem-pole configurations is coupled to an AC line and another of the transistor totem-pole configurations is coupled to an AC neutral. (Page 6, lines 8-9) A parasitic diode in one transistor opposes a parasitic diode in the other transistor and a pump capacitance device is coupled between the transistor totem-pole configurations to drive a primary of an isolation transformer. (Page 6, lines 9-12 and 21-22; Page 7, lines 1-2)

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Dependent Claim 12

Claim 12 depends from independent claim 11 and recites that the isolation transformer is coupled in the power converter to form a series fed, resonant, isolation transformer. (Page 6, lines 1-3)

Dependent Claim 13

Claim 13 depends from independent claim 11 and recites that the transistor totem-pole configurations are coupled in the converter so to yield a power transfer that is substantially a linear function of switching frequency. (Page 6, lines 9-12)

Dependent Claim 14

Claim 14 depends from independent claim 11 and recites that the transistor totem-pole configurations are coupled in the converter so as to turn at least some transistors of said configurations on at substantially zero current. (Page 12, lines 18-20)

Dependent Claim 15

Claim 15 depends from dependent claim 14 and recites that the transistor totem-pole configurations are coupled in the converter so as to turn at least some of said transistors of said configurations off at substantially zero current. (Page 12, lines 18-20)

Dependent Claim 16

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Claim 16 depends from dependent claim 15 and recites that the transistor configurations are coupled in said converter so as to turn all of said transistors of said configurations on and/or off at substantially zero current. (Page 12, lines 18-20)

Dependent Claim 17

Claim 17 depends from independent claim 11 and recites that at least one transistor comprises a MOSFET. (Page 6, lines 16-21)

Dependent Claim 18

Claim 18 depends from independent claim 11 and recites that the pump capacitive device comprises a capacitor. (Page 9, lines 19-20; Fig. 2, 160)

Dependent Claim 19

Claim 19 depends from independent claim 11 and recites that the power converter is incorporated into a motherboard. (Page 14, lines 7-9)

Dependent Claim 20

Claim 20 depends from independent claim 11 and recites that the power converter is coupled to a DC power consuming device. (Page 14, lines 17-20)

Dependent Claim 21

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Claim 21 depends from dependent claim 20 and recites that the DC power consuming device comprises at least one of a fax, printer, scanner, and copier. (Page 14, lines 15-17)

Dependent Claim 22

Claim 22 depends from independent claim 11 and recites that the power converter comprises an AC-DC converter. (Page 4, lines 4-6; Page 6, lines 2-3; Fig. 1)

Dependent Claim 23

Claim 23 depends from independent claim 11 and recites that the power converter includes an input pi filter. (Page 7, lines 12-17)

Dependent Claim 24

Claim 24 depends from independent claim 11 and recites that a secondary of the power converter is coupled so as to provide full wave rectification. (Page 10, lines 17-18)

Independent Claim 25

Independent claim 25 recites a method of converting power comprising charging an electrical storage element during a portion of a cycle so that current is provided by said electrical storage element during another portion of the cycle without rectification. (Page 6, lines 1-2 and 9-11; Page 11, lines 10-22; Fig. 2, 110,

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160) The electrical storage element is a charge pump capacitor and is coupled to a two transistor totem-pole configuration. (Page 6, lines 7-9; Fig. 2, 120, 130) Also, a parasitic diode in one transistor opposes a parasitic diode in the other transistor. (Page 6, lines 21-22; Page 7, lines 1-2)

Dependent Claim 26

Claim 26 depends from independent claim 25 and recites that the electrical storage element is charged during resonant operation of a primary circuit of an isolation transformer. (Page 6, lines 3-6)

Dependent Claim 27

Claim 27 depends from independent claim 25 and recites that the charging and discharging of said electrical storage element switches at substantially zero current. (Page 12, lines 16-21)

Dependent Claim 28

Claim 28 depends from dependent claim 27 and recites that transistor configurations are employed to accomplish the switching. (Page 12, lines 16-21)

Dependent Claim 29

Claim 29 depends from dependent claim 28 and recites that transistor configurations include MOSFETs arranged in a totem pole configuration. (Page 6, lines 18-23; Page 7, lines 1-2)

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Dependent Claim 30

Claim 30 depends from dependent claim 28 and recites that power is converted as substantially a linear function of switching frequency. (Page 6, lines 9-12)

Dependent Claim 32

Claim 32 depends from independent claim 25 and recites that the feedback is employed for synchronization between an applied input voltage signal and an output voltage signal. (Page 10, lines 1-11)

Dependent Claim 33

Claim 33 depends from independent claim 25 and recites that converting power comprises AC to DC conversion. (Page 4, lines 4-6; Page 6, lines 2-3; Fig. 1)

Independent Claim 34

Independent claim 34 recites a system comprising a DC power consuming device and an AC-DC power converter. (Page 4, lines 4-6; Page 6, lines 2-3; Page 14, lines 17-20; Fig. 1) The power converter includes a charge pump capacitor coupled to a two transistor totem-pole configuration to drive a primary of an isolation transformer. (Page 6, lines 7-8; Fig. 2, 120, 130) Also, a parasitic diode in one transistor opposes a parasitic diode in the other transistor. (Page 6, lines 21-22; Page 7, lines 1-2)

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Dependent Claim 35

Claim 35 depends from independent claim 34 and recites that the charge pump capacitor is coupled to drive the primary of an isolation transformer without signal rectification at least in part by being adapted to switch between charging and discharging operation at different portions of a current cycle. (Page 6, lines 1-2 and 9-11; Page 11, lines 10-22; Fig. 2, 110, 160)

Dependent Claim 36

Claim 36 depends from dependent claim 35 and recites that the charge pump capacitor is further adapted to switch between charging and discharging operation at or substantially near zero current. (Page 12, lines 18-20)

Dependent Claim 37

Claim 37 depends from independent claim 34 and recites that the power converter is incorporated on a motherboard with said DC power consuming device. (Page 14, lines 7-9 and 17-20)

Dependent Claim 38

Claim 38 depends from independent claim 34 and recites that the DC power consuming device comprises at least one of a fax, a printer, a scanner and a copier. (Page 14, lines 15-17)

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Dependent Claim 40

Claim 40 depends from independent claim 34 and recites that the power converter includes an input pi filter. (Page 7, lines 12-17)

Dependent Claim 41

Claim 41 depends from independent claim 34 and recites that a secondary of the isolation transformer is coupled in a circuit to perform full-wave rectification. (Page 10, lines 17-18)

Dependent Claim 42

Claim 42 depends from independent claim 34 and recites that the primary of the isolation transformer is coupled so as to resonate during operation. (Page 11, lines 5-7; Page 12, lines 6-8)

Independent Claim 43

Independent claim 43 recites an apparatus comprising a means for converting from an AC voltage to a DC voltage. (Page 4, lines 4-6; Page 6, lines 2-3; Fig. 1) The means for converting includes a means for isolation with a primary and a secondary. (Page 6, lines 1-2; Fig. 2, 110) The means for converting is coupled so that, in operation, AC to DC voltage rectification does not occur on the primary of said means for isolation and is coupled to a two transistor totem-pole configuration with a charge pump capacitor. (Page 12, lines 16-18; Page 6, lines 7-

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8; Fig. 2, 120, 130) Also, a parasitic diode in one transistor opposes a parasitic diode in the other transistor. (Page 6, lines 21-22; Page 7, lines 1-2)

Dependent Claim 44

Claim 44 depends from independent claim 43 and recites that the means for converting is coupled to drive the primary of said means for isolation without signal rectification at least in part by being adapted to switch between charging and discharging operation at different portions of a current cycle. (Page 6, lines 1-2 and 9-11; Page 11, lines 10-22; Fig. 2, 110, 160)

Dependent Claim 45

Claim 45 depends from dependent claim 44 and recites that the means for converting includes a charge pump capacitor, said capacitor being further adapted to switch between charging and discharging operation at or substantially near zero current. (Page 12, lines 18-20)

Dependent Claim 46

Claim 46 depends from independent claim 43 and recites that the means for converting is incorporated on a motherboard. (Page 14, lines 7-9)

Dependent Claim 47

Claim 47 depends from independent claim 43 and recites that the means for converting is coupled to a DC power consuming device. (Page 14, lines 17-20)

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Dependent Claim 48

Claim 48 depends from dependent claim 47 and recites that the DC power consuming device comprises at least one of a fax, printer, scanner, and copier. (Page 14, lines 15-17)

Dependent Claim 49

Claim 49 depends from independent claim 43 and recites that the means for converting comprises an AC-DC power converter. (Page 4, lines 4-6; Page 6, lines 2-3; Fig. 1)

Dependent Claim 50

Claim 50 depends from dependent claim 49 and recites that the power converter includes an input pi filter. (Page 7, lines 12-17)

Dependent Claim 51

Claim 51 depends from dependent claim 49 and recites that the secondary of said means for isolation is coupled in a circuit to perform full-wave rectification. (Page 10, lines 17-18)

Dependent Claim 52

Claim 52 depends from independent claim 43 and recites that the primary of said means for isolation is coupled so as to resonate during operation. (Page 11,

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lines 5-7)

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. Whether or not claims 1-3, 5, 7, 9-18, 20, 22, 24-30, 32-36, 41-45, 47, 49, 51 and 52 are unpatentable under 35 USC § 102(b) over Suzuki et al. (US 6,236,192).

B. Whether or not claims 4, 6, 19, 21, 37, 38, 46 and 48 are unpatentable under 35 USC § 103(a) over Suzuki et al. (US 6,236,192) in view of Walsh et al. (US 5,872,983).

C. Whether or not claims 8, 23, 40 and 50 are unpatentable under 35 USC § 103(a) over Suzuki et al. (US 6,236,192) in view of Balakrishnan (US 6,813,168).

VII. ARGUMENT - Reply to Examiner's Answer

A. Arguments against the rejection under 35 USC § 102(b) over Suzuki et al. (US 6,236,192).

Independent Claims 1, 11, 25, 34, and 43 and Dependent Claims 2-3, 5, 7, 9-10, 12-18, 20, 22, 24, 26-30, 32-33, 35-36, 41-42, 44-45, 47, 49, and 51-52

For independent claims 1, 11, 25, 34, and 43, and dependent claims 2-3, 5, 7, 9-10, 12-18, 20, 22, 24, 26-30, 32-33, 35-36, 41-42, 44-45, 47, 49, and 51-52 the cited reference does not describe, teach, or suggest each and every claimed element.

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Suzuki appears to describe an AC voltage regulator with "a high frequency converter of the half-bridge type." (col. 2, lines 62-63). However, from Applicant's review, the Suzuki reference does not describe a converter having a charge pump capacitor coupled to a two transistor totem-pole configuration in the converter so as to drive a primary of an isolation transformer. The capacitor configuration of Suzuki (C1, C2, or C3) does not have a capacitor coupled to a two transistor totem-pole configuration so as to drive the primary of the isolation transformer, as recited in independent claims 1, 11, and 34, and shown in Fig. 2, 160 and 110 of this application. Also, Suzuki does not have an electrical storage element coupled to a two transistor totem-pole configuration that supplies current without rectification during another portion of the cycle, as recited in independent claims 25, or convert AC voltage to DC voltage where rectification does not occur on the primary of said means for isolation, as recited in independent claim 43. SW1 and SW2 in Suzuki, which the Examiner states as being the two transistor totem-pole configuration, are not coupled to a capacitor (potentially C1, C2, or C3, stated by the Examiner) that would drive the primary of an isolation transformer without rectification on the primary side of an isolation means.

The capacitors, C1 and C2, in Suzuki are "connected to one end of a primary coil of the high-frequency transformer" (Col.2 , lines 56-58) and are "connected in parallel between input terminals 31a and 31b" (Col. 2, lines 54-56). The bi-directional semiconductor switches SW1 and SW2 have an output terminal "connected to the other end of the primary coil of the high-frequency transformer" (Col. 2, lines 58-61). A ring-modulated voltage is "applied to the primary coil of

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the high-frequency transformer." (Col. 3, lines 42-44) Suzuki does not describe a capacitor that drives the primary of an isolation transformer, but a "bi-directional semiconductor switch" to output a ring modulated voltage across a transformer. (Col. 3, lines 44-49) Therefore, the switches in Suzuki are coupled to the primary coil and are not coupled to a charge pump capacitor so as to drive the primary of an isolation transformer.

In contrast, Applicant's independent claim 1 recites:

> a charge pump capacitor, said charge pump capacitor coupled to a two transistor totem-pole configuration in said converter so as to drive a primary of an isolation transformer.

Independent claim 11 recites, "a pump capacitance device coupled between said transistor totem-pole configurations to drive a primary of an isolation transformer."

Independent claim 25 recites:

> charging an electrical storage element during a portion of a cycle so that current is provided by said electrical storage element during another portion of the cycle with rectification; wherein said electrical storage element is a charge pump capacitor; wherein the electrical storage element is coupled to a two transistor totem-pole configuration.

Independent claim 34 recites:

> said power converter including a charge pump capacitor, said charge pump capacitor coupled to a two transistor totem-pole configuration in said converter so as to drive a primary of an isolation transformer.

Independent claim 43 recites:

> said means for converting being coupled so that, in operation, AC to DC voltage rectification does not occur on the primary of said means for isolation; wherein said means for converting includes being coupled to a two transistor totem-pole configuration with a charge pump capacitor.

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As such, Applicant respectfully submits that each and every element of independent claims 1, 11, 25, 34, and 43 are not present in the Suzuki reference. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the 102 rejection of independent claim 1 and claims 2-3, 5, 7, and 9-10, which depend therefrom; independent claim 11 and claims 12-18, 20, 22, and 24, which depend therefrom; independent claim 25 and claims 26-30 and 32-33, which depend therefrom; independent claim 34 and claims 35-36 and 41-42, which depend therefrom; and independent claim 43 and claims 44-45, 47, 49, and 51-52, which depend therefrom.

B. Arguments against the rejection under 35 USC § 103(a) over Suzuki et al. (US 6,236,192) in view of Walsh et al. (US 5,872,983).

Dependent Claims 4, 6, 19, 21, 37, 38, 46 and 48

Claims 4 and 6 depend from independent claim 1. Applicant respectfully submits that claim 1 is in condition for allowance in view of Suzuki. From Applicant's review of the Walsh reference, the reference does not cure the deficiencies of the previously described Suzuki reference.

Walsh appears to describe an electronic system that has a power management logic circuit. (Abstract). However, from Applicant's review, the Walsh reference does not describe a converter having a charge pump capacitor coupled to a two transistor totem-pole configuration in the converter so as to drive a primary of an isolation transformer. Walsh uses an integrated circuit chip for power management with a logic section connected to a voltage supply terminal on the chip. (Col. 2, lines 19-23). The integrated circuit chip in Walsh is used to

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manage power usage in an electronic device, but the chip is not part of a power converter described in the present application. Walsh does not have a capacitor coupled to a two transistor totem-pole configuration. Therefore, as recited in independent claim 1 of the present application, Walsh nor Suzuki, neither individually or in combination, describe, teach, or suggest:

> said power converter including a charge pump capacitor, said charge pump capacitor coupled to a two transistor totem-pole configuration in said converter so as to drive a primary of an isolation transformer.

Claims 19 and 21 depend from independent claim 11. Applicant respectfully submits that claim 11 is in condition for allowance in view of Suzuki. From Applicant's review of the Walsh reference, the reference does not cure the deficiencies of the previously described Suzuki reference.

As described above, Walsh manages power usage in an electronic device and does not have a capacitor coupled to a two transistor totem-pole configuration. Therefore, as recited in independent claim 11 of the present application, Walsh nor Suzuki, neither individually or in combination, describe, teach, or suggest, "a pump capacitance device coupled between said transistor totem-pole configurations to drive a primary of an isolation transformer."

Claims 37 and 38 depend from independent claim 34. Applicant respectfully submits that claim 34 is in condition for allowance in view of Suzuki. From the Applicant's review of the Walsh reference, the reference does not cure the deficiencies of the previously described Suzuki reference.

As described above, Walsh manages power usage in an electronic device and does not have a capacitor coupled to a two transistor totem-pole configuration.

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Therefore, as recited in independent claim 34 of the present application, Walsh nor Suzuki, neither individually or in combination, describe, teach, or suggest:

> said power converter including a charge pump capacitor, said charge pump capacitor coupled to a two transistor totem-pole configuration in said converter so as to drive a primary of an isolation transformer.

Claims 46 and 48 depend from independent claim 43. Applicant respectfully submits that claim 43 is in condition for allowance in view of Suzuki. From Applicant's review of the Walsh reference, the reference does not cure the deficiencies of the previously described Suzuki reference.

As described above, Walsh manages power usage in an electronic device and does not have a capacitor coupled to a two transistor totem-pole configuration. Therefore, as recited in independent claim 34 of the present application, Walsh nor Suzuki, neither individually or in combination, describe, teach, or suggest, "wherein said means for converting includes being coupled to a two transistor totem-pole configuration with a charge pump capacitor."

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the 103 rejection of dependent claims 4, 6, 19, 21, 37, 38, 46 and 48.

C. Arguments against the rejection under 35 USC § 103(a) over Suzuki et al. (US 6,236,192) in view of Balakrishnan (US 6,813,168).

Dependent Claims 8, 23, 40 and 50

Claim 8 depends from independent claim 1. Applicant respectfully submits that claim 1 is in condition for allowance in view of Suzuki. From Applicant's review of the Balakrishnan reference, the reference does not cure the deficiencies of the previously described Suzuki reference.

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Balakrishnan appears to describe a power supply electromagnetic interference (EMI) filter circuit and technique. (Abstract). Balakrishnan has EMI filter circuitry that "is coupled in a configuration that is known as a pi filter." (Col. 2, lines 38-40). However, from Applicant's review, the Balakrishnan reference does not describe a converter having a charge pump capacitor coupled to a two transistor totem-pole configuration in the converter so as to drive a primary of an isolation transformer. Balakrishnan uses a pi filter when filtering an input to a power supply, but the pi filter in Balakrishnan is not part of a power converter described in the present application. Balakrishnan does not have a capacitor coupled to a two transistor totem-pole configuration. Therefore, as recited in independent claim 1 of the present application, Balakrishnan nor Suzuki, neither individually or in combination, describe, teach, or suggest:

> said power converter including a charge pump capacitor, said charge pump capacitor coupled to a two transistor totem-pole configuration in said converter so as to drive a primary of an isolation transformer.

Claim 23 depends from independent claim 11. Applicant respectfully submits that claim 11 is in condition for allowance in view of Suzuki. From Applicant's review of the Balakrishnan reference, the reference does not cure the deficiencies of the previously described Suzuki reference.

As described above, Balakrishnan uses a pi filter when filtering an input to a power supply, but does not have a capacitor coupled to a two transistor totem-pole configuration. Therefore, as recited in independent claim 11 of the present application, Balakrishnan nor Suzuki, neither individually or in combination,

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describe, teach, or suggest, "a pump capacitance device coupled between said transistor totem-pole configurations to drive a primary of an isolation transformer."

Claim 40 depends from independent claim 34. Applicant respectfully submits that claim 34 is in condition for allowance in view of Suzuki. From Applicant's review of the Balakrishnan reference, the reference does not cure the deficiencies of the previously described Suzuki reference.

As described above, Balakrishnan uses a pi filter when filtering an input to a power supply, but does not have a capacitor coupled to a two transistor totem-pole configuration. Therefore, as recited in independent claim 34 of the present application, Balakrishnan nor Suzuki, neither individually or in combination, describe, teach, or suggest:

> said power converter including a charge pump capacitor, said charge pump capacitor coupled to a two transistor totem-pole configuration in said converter so as to drive a primary of an isolation transformer.

Claim 50 depends from independent claim 43. Applicant respectfully submits that claim 43 is in condition for allowance in view of Suzuki. From Applicant's review of the Balakrishnan reference, the reference does not cure the deficiencies of the previously described Suzuki reference.

As described above, Balakrishnan uses a pi filter when filtering an input to a power supply, but does not have a capacitor coupled to a two transistor totem-pole configuration. Therefore, as recited in independent claim 43 of the present application, Balakrishnan nor Suzuki, neither individually or in combination, describe, teach, or suggest, "wherein said means for converting includes being coupled to a two transistor totem-pole configuration with a charge pump capacitor."

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Accordingly, Applicant respectfully requests reconsideration and withdrawal of the 103 rejection of dependent claims 8, 23, 40, and 50.

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CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner and/or members of the Board are invited to telephone Applicant's attorney Robert D. Wasson at (360) 212-2338 to facilitate this appeal.

At any time during the pendency of this application, please charge any additional fees or credit overpayment to the Deposit Account No. 08-2025.

CERTIFICATE UNDER 37 C.F.R. §1.8: The undersigned hereby certifies that this correspondence is being transmitted to the United States Patent Office facsimile number (571) 273-8300 on December 14, 2007

Alison L. Sulander
Name

Signature

Respectfully Submitted,
B. Mark Hirst

By his Representatives:
Brooks, Cameron & Huebsch, PLLC
1221 Nicollet Avenue, Suite 500
Minneapolis, MN 55403

Atty: Edward J. Brooks III
Reg. No.: 40,925

12/14/2007
Date:

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VIII. CLAIMS APPENDIX

1. (Previously Presented) An apparatus comprising:

a power converter;

said power converter including a charge pump capacitor, said charge pump capacitor coupled to a two transistor totem-pole configuration in said converter so as to drive a primary of an isolation transformer; and

wherein a parasitic diode in one transistor opposes a parasitic diode in the other transistor.

2. (Original) The apparatus of claim 1, wherein said charge pump capacitor is coupled to drive the primary of an isolation transformer without signal rectification at least in part by being adapted to switch between charging and discharging operation at different portions of a current cycle.

3. (Original) The apparatus of 2, wherein said charge pump capacitor is further adapted to switch between charging and discharging operation at or substantially near zero current.

4. (Original) The apparatus of claim 1, wherein said power converter is incorporated on a motherboard.

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5. (Original) The apparatus of claim 1, wherein said power converter is coupled to a DC power consuming device.

6. (Original) The apparatus of claim 5, wherein said DC power consuming device comprises at least one of a fax, printer, scanner, and copier.

7. (Original) The apparatus of claim 1, wherein said power converter comprises an AC-DC power converter.

8. (Original) The apparatus of claim 7, wherein said power converter includes an input pi filter.

9. (Original) The apparatus of claim 7, wherein a secondary of said isolation transformer is coupled in a circuit to perform full-wave rectification.

10. (Original) The apparatus of claim 1, wherein said primary of said isolation transformer is coupled so as to resonate during operation.

11. (Previously Presented) A circuit comprising:

a power converter;

said power converter comprising at least two transistor totem-pole configurations; one of said transistor totem-pole configurations coupled to an AC line and another of said transistor totem-pole configurations coupled to an AC

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neutral; wherein a parasitic diode in one transistor opposes a parasitic diode in the other transistor; and a pump capacitance device coupled between said transistor totem-pole configurations to drive a primary of an isolation transformer.

12. (Original) The circuit of claim 11, wherein said isolation transformer is coupled in said power converter to form a series fed, resonant, isolation transformer.

13. (Previously Presented) The circuit of claim 11, wherein said transistor totem-pole configurations are coupled in said converter so to yield a power transfer that is substantially a linear function of switching frequency.

14. (Previously Presented) The circuit of claim 11, wherein said transistor totem-pole configurations are coupled in said converter so as to turn at least some transistors of said configurations on at substantially zero current.

15. (Previously Presented) The circuit of claim 14, wherein said transistor totem-pole configurations are coupled in said converter so as to turn at least some of said transistors of said configurations off at substantially zero current.

16. (Original) The circuit of claim 15, wherein said transistor configurations are coupled in said converter so as to turn all of said transistors of said configurations on and/or off at substantially zero current.

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17. (Previously Presented) The circuit of claim 11, wherein at least one transistor comprises a MOSFET.

18. (Original) The circuit of claim 11, wherein said pump capacitive device comprises a capacitor.

19. (Original) The circuit of claim 11, wherein said power converter is incorporated into a motherboard.

20. (Previously Presented) The circuit of claim 11, wherein said power converter is coupled to a DC power consuming device.

21. (Original) The circuit of claim 20, wherein said DC power consuming device comprises at least one of a fax, printer, scanner, and copier.

22. (Original) The circuit of claim 11, wherein said power converter comprises an AC-DC converter.

23. (Original) The circuit of claim 11, wherein said power converter includes an input pi filter.

24. (Original) The circuit of claim 11, wherein a secondary of said power converter is coupled so as to provide full wave rectification.

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25. (Previously Presented) A method of converting power comprising:

charging an electrical storage element during a portion of a cycle so that current is provided by said electrical storage element during another portion of the cycle without rectification;

wherein said electrical storage element is a charge pump capacitor;

wherein the electrical storage element is coupled to a two transistor totem-pole configuration; and

wherein a parasitic diode in one transistor opposes a parasitic diode in the other transistor.

26. (Original) The method of claim 25, wherein said electrical storage element is charged during resonant operation of a primary circuit of an isolation transformer.

27. (Original) The method of claim 25, wherein charging and discharging of said electrical storage element switches at substantially zero current.

28. (Original) The method of claim 27, wherein transistor configurations are employed to accomplish the switching.

29. (Original) The method of claim 28, wherein said transistor configurations include MOSFETs arranged in a totem pole configuration.

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30. (Original) The method of claim 28, wherein power is converted as substantially a linear function of switching frequency.

31. (Canceled)

32. (Original) The method of claim 25, wherein feedback is employed for synchronization between an applied input voltage signal and an output voltage signal.

33. (Original) The method of claim 25, wherein converting power comprises AC to DC conversion.

34. (Previously Presented) A system comprising:

a DC power consuming device and an AC-DC power converter;

said power converter including a charge pump capacitor, said charge pump capacitor coupled to a two transistor totem-pole configuration in said converter so as to drive a primary of an isolation transformer; and

wherein a parasitic diode in one transistor opposes a parasitic diode in the other transistor.

35. (Original) The system of claim 34, wherein said charge pump capacitor is coupled to drive the primary of an isolation transformer without signal rectification

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at least in part by being adapted to switch between charging and discharging operation at different portions of a current cycle.

36. (Original) The system of 35, wherein said charge pump capacitor is further adapted to switch between charging and discharging operation at or substantially near zero current.

37. (Original) The system of claim 34, wherein said power converter is incorporated on a motherboard with said DC power consuming device.

38. (Original) The system of claim 34, wherein said DC power consuming device comprises at least one of a fax, a printer, a scanner and a copier.

39. (Canceled)

40. (Previously Presented) The system of claim 34, wherein said power converter includes an input pi filter.

41. (Previously Presented) The system of claim 34, wherein a secondary of said isolation transformer is coupled in a circuit to perform full-wave rectification.

42. (Original) The system of claim 34, wherein said primary of said isolation transformer is coupled so as to resonate during operation.

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43. (Previously Presented) An apparatus comprising:

means for converting from an AC voltage to a DC voltage;

said means for converting including a means for isolation, said means for isolation including a primary and a secondary;

said means for converting being coupled so that, in operation, AC to DC voltage rectification does not occur on the primary of said means for isolation;

wherein said means for converting includes being coupled to a two transistor totem-pole configuration with a charge pump capacitor; and

wherein a parasitic diode in one transistor opposes a parasitic diode in the other transistor.

44. (Original) The apparatus of claim 43, wherein said means for converting is coupled to drive the primary of said means for isolation without signal rectification at least in part by being adapted to switch between charging and discharging operation at different portions of a current cycle.

45. (Original) The apparatus of 44, wherein said means for converting includes a charge pump capacitor, said capacitor being further adapted to switch between charging and discharging operation at or substantially near zero current.

46. (Original) The apparatus of claim 43, wherein said means for converting is incorporated on a motherboard.

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47. (Original) The apparatus of claim 43, wherein said means for converting is coupled to a DC power consuming device.

48. (Original) The apparatus of claim 47, wherein said DC power consuming device comprises at least one of a fax, printer, scanner, and copier.

49. (Original) The apparatus of claim 43, wherein said means for converting comprises an AC-DC power converter.

50. (Original) The apparatus of claim 49, wherein said power converter includes an input pi filter.

51. (Original) The apparatus of claim 49, wherein the secondary of said means for isolation is coupled in a circuit to perform full-wave rectification.

52. (Original) The apparatus of claim 43, wherein said primary of said means for isolation is coupled so as to resonate during operation.

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IX. EVIDENCE APPENDIX

None

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X. RELATED PROCEEDINGS APPENDIX

Appellant submits that no copies currently exist of decisions rendered by a court or the Board in any proceeding identified pursuant to paragraph (c)(1)(ii) of section 41.37 with regard to Application Number 10/764,409.

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